



Xie

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

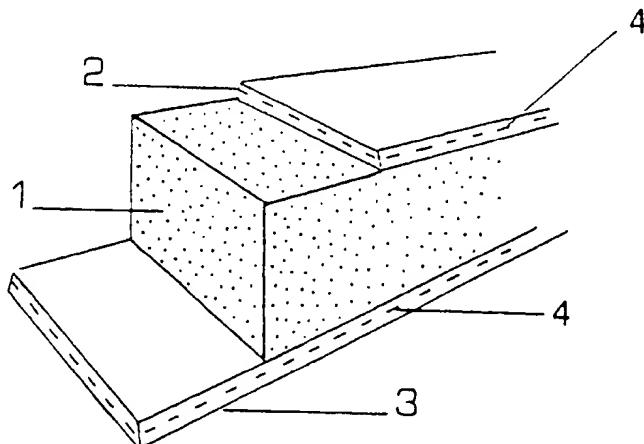
(51) International Patent Classification <sup>6</sup> :		(11) International Publication Number:	WO 95/11357
E04C 2/04, B32B 13/02	A1	(43) International Publication Date:	27 April 1995 (27.04.95)
(21) International Application Number:	PCT/IT94/00174	(81) Designated States:	AM, AT, AU (Petty patent), BB, BG, BR (Utility model), BY, CA, CH, CN (Utility model), CZ, DE (Utility model), DK, ES (Utility model), FL, GB, GE, HU, JP (Utility model), KE, KG, KP, KR, KZ, LK, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL (Utility model), PT (Utility model), RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ).
(22) International Filing Date:	17 October 1994 (17.10.94)		
(30) Priority Data:	RM93U000185 19 October 1993 (19.10.93) IT		
(71) Applicant (for all designated States except US):	SEAL COSTRUZIONI S.R.L. [IT/IT]; Via San Biagio Platani, 78, I-00133 Roma (IT).		
(72) Inventor; and		Published	
(75) Inventor/Applicant (for US only):	VALENTE, Corrado [IT/IT]; Via Prenestina Nuova, 120, I-00036 Palestrina (IT).	With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.	
(74) Agents:	BAZZICHELLI, Alfredo et al.; Società Italiana Brevetti S.p.A., Piazza di Pietra, 39, I-00187 Roma (IT).		

(54) Title: CEMENT PANEL

## (57) Abstract

Cement panel, capable of being employed in civil and building constructions, in particular to form boxes, shelves, moving walls, intermediate floors and the like, characterized in that it comprises an aerated concrete core (1), and a surface finish (2, 3) on both sides, reinforced with a traction-resistant material (4), the arrangement being such as to give the panel lightness, mechanical strength, a high level of thermal and acoustic insulation, high resistance to damp and excellent fireproofing qualities.

aerated concrete  
aluminum netting



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Larvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

- 1 -

CEMENT PANEL  
DESCRIPTION

5        The present invention relates to a cement panel suitable for use in building constructions and the like, in particular to form boxes, shelves, moving walls, intermediate floors and the like.

10      As is known from the state of the art, solutions already exist for uses of this kind. For insulation against sound and atmospheric agents it is possible to use panels with an extruded polystyrene core, which makes the panels light and gives good insulation against damp and sound. This core is coated on both sides by a layer of resin-based mortar or the like, reinforced with fiberglass netting to give said panel greater resistance to mechanical stress and wear due to atmospheric agents and sunlight. Said panels are used to cover roofs and walls or as insulation for rooms. However, such kind of panels give a problem in that they are not fireproof, as their core is in polystyrene and this material has an extremely low resistance to high temperatures. Furthermore, extruded polystyrene is a material with extremely low mechanical strength, which limits the use of these panels to certain coating applications only.

25      As an alternative to these panels, there exist panels constructed in the same manner, but with a core in pressure stabilized aerated concrete covered on both sides by a layer of cement mortar reinforced with a fiberglass net, which gives them greater resistance to mechanical stress and aging, and particularly impermeable to water. While these panels keep the lightness characteristic of aerated concrete, they have greater mechanical strength with respect to those mentioned above in extruded polystyrene, as is typical of concrete elements, give a good level of thermal and acoustic insulation and excellent behaviour in face of fire, being practically flame-resistant. These panels

- 2 -

are therefore used to cover roofs, to protect areas against atmospheric agents, as fire barriers, internal walls and the like.

5 The problem with these panels is that they require extremely laborious manufacturing techniques carried out in large industrial plants, which involve much higher costs than the panels described initially.

10 The object of the present invention is to provide a panel that is light and extremely strong mechanically, that gives excellent thermal and acoustic insulation, that is extremely resistant to damp and has excellent fire prevention characteristics.

15 A further object of the invention is to provide a panel that can be used as a tile and can be applied to any surface with ease.

20 The panel according to the present invention comprises a core in aerated concrete and a surface finish on both sides in cement mortar reinforced with a fiberglass net, giving the panel a high resistance to mechanical stress.

25 The present invention will be more clearly illustrated in the following with reference to a preferred embodiment thereof, given as a non-limiting example, with reference to the sole figure enclosed, which shows a perspective view of the panel.

30 With reference to the figure, the panel according to the present invention comprises a aerated concrete core 1, finished on both sides with a layer of cement mortar, indicated with numerals 2 and 3, respectively, said layer being reinforced by a net (dotted line 4) of traction-resistant material, for example fiberglass, providing said panel an improved resistance to mechanical stress.

35 This arrangement makes the panel extremely light, very resistant to shock and aging, provides a high level of thermal and acoustic insulation, high resistance to damp and water (it does not warp and is

- 3 -

frostproof), and also high resistance to fire.

Furthermore, the presence of said layer of mortar makes the panel capable of being used as a tile, fixed with normal tile adhesives, and also makes the panel easy to apply on any surface, either using adhesive (for example mortar or bitumen adhesives) or using nails, screws and pins.

The aerated concrete in the panel according to the present invention has, preferably, a specific weight of 10 0.3 to 0.8 kg/dm<sup>3</sup>.

The main uses for the panel, which can also be made-to-measure, are the following:

formation of look-out posts, bins, covering panels;

15 closure of passages through walls, floors, etc.;

formation of shower surrounds, kitchen surrounds, base units, shelves;

mobile walls, interlinings, dividing walls, intermediate floors;

20 interspaces under damp floors (cellars, etc.);

floating pavements for D.P.U.;

ceiling-beams to be covered with wood or steel;

fireproofing of metal structural elements;

for carpentry: panels for doors, fire doors, bins, 25 one-piece windows (outer part).

The following table gives, purely as an example, several parameters for panels according to the present invention.

30 PANEL TYPE: JOLLI

PANEL THICKNESS cm 3.0 5.0 8.0

STANDARD LENGTH m 3.60 3.60 3.60

STANDARD WIDTH m 1.20 1.20 1.20

35 WEIGHT Kg/m<sup>2</sup> 15 21 33

THERMAL TRANSMITTANCY (K) W/mK 2.32 1.36 0.78

FIRE RESISTANCE min 30 60 120

- 4 -

The present invention is not limited to the embodiment described, but comprises any configuration thereof.

5

10

15

20

25

30

35

- 5 -

CLAIMS

1. Cement panel, capable of being used in civil and building constructions, in particular to form boxes, shelves, moving walls, intermediate floors and the like, comprising an aerated core, and a surface finish adhering on both sides surfaces, reinforced with a traction-resistant material, characterized in that said aerated core is made of aerated concrete; the arrangement being such as to provide to the panel lightness, give it mechanical strength, a high level of thermal and acoustic insulation, high resistance to damp and excellent fireproofing qualities.
2. A cement panel according to claim 1, in which said surface finish is of cement mortar.
3. A cement panel according to claims 1 or 2, in which said reinforcing material is fiberglass.
4. A cement panel according to any one of the preceding claims, in which said aerated concrete core has a specific weight of 0.3 to 0.8 kg/dm<sup>3</sup>.

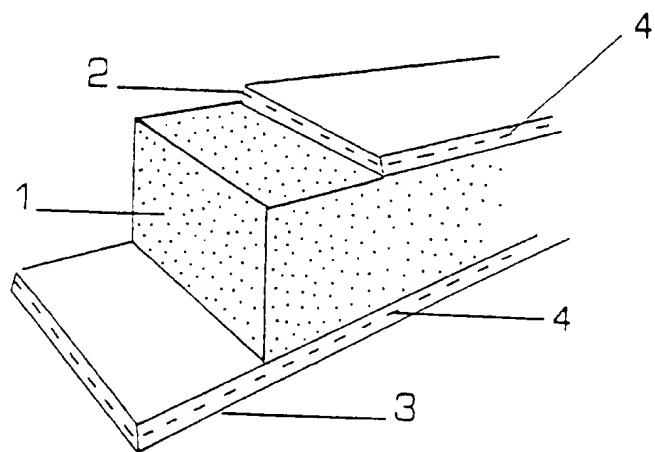
20

25

30

35

1/1



## INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 94/00174

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 E04C2/04 B32B13/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 E04C B32B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE,A,28 54 228 (YTONG AG) 19 June 1980 see page 5, line 5 - page 12, line 15; claims 1-8; figure 1 ----	1-4
A	DE,A,26 28 457 (MITSCHRICK) 5 January 1978 see page 4, line 9 - line 43; claims 1-4,18 -----	1-3

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

- 2

Date of the actual completion of the international search  3 February 1995	Date of mailing of the international search report  - 3. 03. 95
Name and mailing address of the ISA  European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Authorized officer  Mysliwetz, W

Form PCT/ISA/210 (second sheet) (July 1992)

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/IT 94/00174

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
DE-A-2854228	19-06-80	AT-B- CH-A-	367136 638856	11-06-82 14-10-83
DE-A-2628457	05-01-78	NONE		

Form PCT/ISA/310 (patent family annex) (July 1992)